

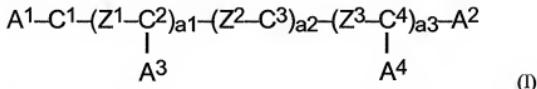
**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (original): A mesogenic, cross-linkable mixture comprising:
  - i) a cross-linkable liquid crystalline host comprising at least one cross-linkable liquid crystalline compound, and
  - ii) at least one chiral or achiral rod shaped additive component, wherein said additive component has a rigid core and comprises at least two fused or linked, optionally substituted, non-aromatic, aromatic, carbocyclic or heterocyclic groups, and also comprises at least one optionally substituted alkyl residue, and at least one polymerizable group and wherein the additive component has a transition temperature to the isotropic state of 40 °C or lower.
2. (original): A mixture according to claim 1, wherein the additive component has a transition temperature to the isotropic state of 20 °C or lower.
3. (original): A mixture according to claim 1, wherein the additive component has a transition temperature to the isotropic state of 0 °C or lower.
4. (previously presented): A mixture according to claim 1 having a clearing temperature of 30 °C or higher.
5. (previously presented): A mixture according to claim 1 having a clearing temperature of 50 °C or higher.
6. (previously presented): A mixture according to any one of claims 1 to 5, wherein the liquid crystalline host has a clearing temperature of 50 °C or higher.

7. (previously presented): A mixture according to claim 1, wherein the additive component is a compound of formula (I):



wherein:

$A^1$  to  $A^4$  are independently from each other hydrogen, a polar group such as nitro, cyano, a halogen, an optionally substituted methyl group, or an optionally substituted hydrocarbon group of 2 to 40 C-atoms, in which one or more C-atoms may be replaced by a heteroatom, in such a way that oxygen atoms are not linked to one another,

with the proviso that at least one of  $A^1$  to  $A^4$  comprises a polymerizable group,

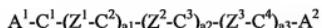
$C^1$  to  $C^4$  are independently from each other optionally substituted non-aromatic, aromatic, carbocyclic or heterocyclic groups, preferably connected to each other at the opposite positions via the bridging groups  $Z^1$  to  $Z^3$ ,

$Z^1$  to  $Z^3$  are independently from each other -CH(OH)-, -CO-, -CH<sub>2</sub>(CO)-, -SO-, -CH<sub>2</sub>(SO)-, -SO<sub>2</sub>-, -CH<sub>2</sub>(SO<sub>2</sub>)-, -COO-, -OCO-, -COCF<sub>2</sub>-, -CF<sub>2</sub>CO-, -S-CO-, -CO-S-, -SOO-, -OSO-, -SOS-, -CH<sub>2</sub>-CH<sub>2</sub>-, -OCH<sub>2</sub>-, -CH<sub>2</sub>O-, -CH=CH-, -C≡C-, -CH=CH-COO-, -OCO-CH=CH-, -CH=N-, -C(CH<sub>3</sub>)=N-, -N=N- or a single covalent bond,

$a1$ ,  $a2$  and  $a3$  are independently from each other integers from 0 to 3, such that

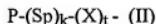
$$1 \leq a1 + a2 + a3 \leq 3,$$

with the proviso that the sequence:



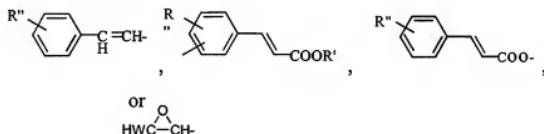
describes the long molecular axis of the rod shaped additive components.

8. (original): A mixture according to claim 7, wherein the additive component is a compound of formula (I), wherein at least one of A<sup>1</sup> to A<sup>4</sup> includes a polymerizable group, selected from a residue of formula (II):



wherein:

P is hydrogen or a polymerizable group selected from groups comprising CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, CH<sub>2</sub>=CW-COO-, CH<sub>2</sub>=C(Ph)-COO-, CH<sub>2</sub>=CH-COO-Ph-, CH<sub>2</sub>=CW-CO-NH-, CH<sub>2</sub>=C(Ph)-CONH-, CH<sub>2</sub>=C(COOR')-CH<sub>2</sub>-COO-, CH<sub>2</sub>=CH-OOC-, (Ph)-CH=CH-, CH<sub>3</sub>-CH=N-(CH<sub>2</sub>)<sub>m1</sub>-, HO-, HS-, HO-(CH<sub>2</sub>)<sub>m1</sub>-, HS-(CH<sub>2</sub>)<sub>m1</sub>-, HO(CH<sub>2</sub>)<sub>m1</sub>COO-, HS(CH<sub>2</sub>)<sub>m1</sub>COO-, HWN-, HOC(O)-, CH<sub>2</sub>=CH-Ph-(O)<sub>m2</sub>,



wherein:

W is H, F, Cl, Br or I or a C<sub>1-6</sub> alkyl group,

m1 is an integer having a value of from 1 to 9,

m2 is an integer having a value of 0 or 1,

R' is a C<sub>1-6</sub> alkyl group,

R'' is a C<sub>1-6</sub> alkyl group, methoxy, cyano, F, Cl, Br or I,

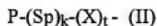
Sp is an optionally substituted straight or branched C<sub>1-30</sub> alkylene group, in

which one or more -CH<sub>2</sub>- groups may be replaced by a heteroatom and/or by a polar group

and/or it is optionally possible that one or more carbon-carbon single bond(s) is/are replaced by a carbon-carbon double or a triple bond,

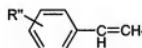
- k is an integer having a value of from 0 to 4,
- X is -O-, -S-, -NH-, -N(CH<sub>3</sub>)-, -CH(OH)-, -CO-, -CH<sub>2</sub>(CO)-, -SO-, -CH<sub>2</sub>(SO)-, -SO<sub>2</sub>-, -CH<sub>2</sub>(SO<sub>2</sub>)-, -COO-, -OCO-, -OCO-O-, -S-CO-, -CO-S-, -SOO-, -OSO-, -SOS-, -CH<sub>2</sub>-CH<sub>2</sub>-, -OCH<sub>2</sub>-, -CH<sub>2</sub>O-, -CH=CH-, -C≡C-, or a single bond,
- t is an integer having a value of 0 or 1.

9. (previously presented): A mixture according to one of claims 7 and 8, wherein at least one of A<sup>1</sup> to A<sup>4</sup> of formula (I) is a group of formula (II):



wherein:

- P is a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, CH<sub>2</sub>=CW-COO- or



wherein:

- W is H, CH<sub>3</sub>, F, Cl, Br or I,

- R'' is a C<sub>1-6</sub> alkyl group, methoxy, cyano, F, Cl, Br or I.

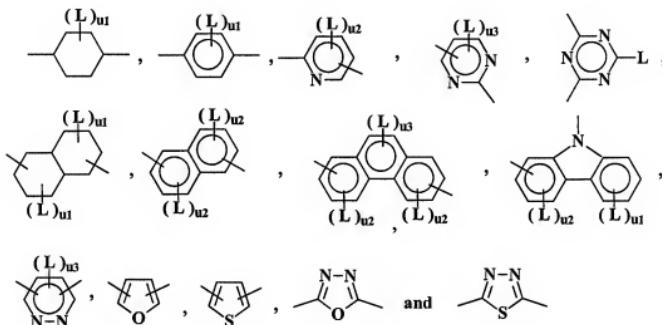
Sp is a C<sub>1-22</sub> branched or straight-chain alkylene group, in which one or more -CH<sub>2</sub>- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH(OH)-, -SO<sub>2</sub>-, -COO-, -OCO-, -OCO-O-, -CH=CH-, -C≡C-, -(CF<sub>2</sub>)<sub>r</sub>-, with the proviso that no two oxygen atoms are directly linked to each other, and wherein r is an integer between 1 and 10,

- k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1.

10. (previously presented): A mixture according to one of claims 7 and 8, wherein C<sup>1</sup> to C<sup>4</sup> are preferably selected from:



wherein:

L is -CH<sub>3</sub>, -COCH<sub>3</sub>, -NO<sub>2</sub>, -CN or halogen,

u1 is 0, 1, 2, 3, or 4,

u2 is 0, 1, 2, or 3,

u3 is 0, 1, or 2.

11. (previously presented): A mixture according to one of claims 7 and 8, wherein:

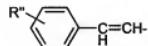
C<sup>1</sup> to C<sup>4</sup> are selected from optionally substituted cyclohexyl or cyclohexylene, phenyl or phenylene, naphthyl or naphthylene or phenanthryl or phenanthrylene,

A<sup>1</sup> to A<sup>4</sup> independently from each other is hydrogen, a polar group such as cyano, nitro, a halogen, or a group of formula (II)

P-(Sp)<sub>k</sub>-(X)<sub>t</sub>-(II)

in which:

P is hydrogen or a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, CH<sub>2</sub>=CW-COO- or



wherein:

W is H, CH<sub>3</sub>, F, Cl Br or I,

R'' is a C<sub>1-6</sub> alkyl group, methoxy, cyano, F, Cl, Br or I,

Sp is a C<sub>1-22</sub> branched or straight-chain alkylene group, in which one or more -CH<sub>2</sub>- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH(OH)-, -SO<sub>2</sub>-, -COO-, -OCO-, -OCO-O-, -CH=CH-, -C≡C-, -(CF<sub>2</sub>)<sub>r</sub>-,

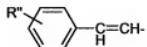
with the proviso that no two oxygen atoms are directly linked to each other, and wherein r is an integer between 1 and 10,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

with the proviso that at least one of A<sup>1</sup> to A<sup>4</sup> comprises a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, CH<sub>2</sub>=CW-COO- or



wherein:

W is H, CH<sub>3</sub>, F, Cl, Br or I,

R" is a C<sub>1-6</sub> alkyl group, methoxy, cyano, F, Cl, Br or I.

12. (previously presented): A mixture according to one of claims 7 and 8, wherein:

A<sup>1</sup> comprises a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

A<sup>2</sup> has the meaning of formula (II),

P-(Sp)<sub>k</sub>-(X)<sub>l</sub>- (II)

in which:

P is hydrogen or a polymerizable group such as

as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O- or CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

Sp is a branched C<sub>3</sub>-C<sub>16</sub> alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C<sub>2</sub>-C<sub>16</sub> alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more -CH<sub>2</sub>- groups present in the

hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1

A<sup>4</sup> is hydrogen.

13. (previously presented): A mixture according to one of claims 7 and 8, wherein:

A<sup>1</sup> has the meaning of formula (II),

P-(Sp)<sub>k</sub>-(X)<sub>t</sub> - (II)

wherein:

P is hydrogen or a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O- or CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

Sp is a branched C<sub>3</sub>-C<sub>16</sub> alkylene group, optionally comprising at least one oxocarbonyl or group, or is a straight C<sub>2</sub>-C<sub>1</sub> alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more -CH<sub>2</sub>- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

A<sup>2</sup> comprises a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, or CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

A<sup>4</sup> is hydrogen.

14. (previously presented): A mixture according to one of claims 7 and 8, wherein:

A<sup>1</sup> has the meaning of formula (II),

P-(Sp)<sub>k</sub>(X)<sub>t</sub> - (II)

wherein:

P is hydrogen or a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O- or CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

Sp is a branched C<sub>3</sub>-C<sub>16</sub> alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C<sub>2</sub>-C<sub>16</sub> alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more -CH<sub>2</sub>- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

A<sup>3</sup> comprises a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, or CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

A<sup>4</sup> is hydrogen.

15. (currently amended): A mixture according to one of claims 7 and 8, wherein: A<sup>2</sup> has the meaning of formula (II),

P-(Sp)<sub>k</sub>-(X)<sub>t</sub> - (II)

in which:

P is hydrogen or a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O- or CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

Sp is a branched C<sub>3</sub>-C<sub>16</sub> alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C<sub>2</sub>-C<sub>16</sub> alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more -CH<sub>2</sub>- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond,  
more preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

A<sup>3</sup> comprises a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, or  
CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

A<sup>4</sup> is hydrogen.

16. (previously presented): A mixture according to one of claims 7 and 8, wherein:  
A<sup>1</sup> and A<sup>2</sup> have the meaning of formula (II),

P-(Sp)<sub>k</sub>-(X)<sub>t</sub> - (II)

wherein:

P is hydrogen or a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O- or  
CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

Sp is a branched C<sub>3</sub>-C<sub>16</sub> alkylene group, optionally comprising at least one  
oxocarbonyl or carbonyloxy group, or is a straight C<sub>2</sub>-C<sub>16</sub> alkylene group, comprising at least one  
oxocarbonyl or carbonyloxy group, wherein one or more -CH<sub>2</sub>- groups present in the  
hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-,  
-CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

A<sup>3</sup> comprises a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, or CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

A<sup>4</sup> is hydrogen.

17. (previously presented): A mixture according to one of claims 7 and 8, wherein at least one of A<sup>1</sup> to A<sup>3</sup> has the meaning of formula (II),

P-(Sp)<sub>k</sub>-(X)<sub>l</sub> - (II)

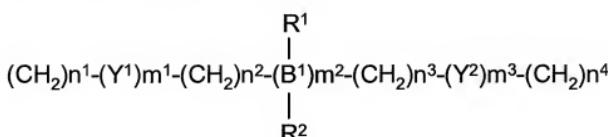
wherein:

P is hydrogen or a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

Sp has the meaning of formula (III)



(III)

wherein:

$Y^1$  and  $Y^2$  each independently represent  $-OCO-$  or  $-COO-$ ,

$B^1$  represents C or CH,

$R^1$  and  $R^2$  each independently represent hydrogen or a  $C_1-C_{12}$  alkyl residue,

preferably a  $C_1-C_6$  alkyl residue, such as a methyl, ethyl, propyl, butyl, pentyl, hexyl or isopropyl residue,

$n_1$ ,  $n_2$ ,  $n_3$  and  $n_4$  are independently integers from 0 to 15, such that  $0 \leq n_1 + n_2 + n_3 + n_4 \leq 15$ ,

$m_1$ ,  $m_2$  and  $m_3$  are independently integers from 0 to 3, such that

$1 \leq m_1 + m_2 + m_3 \leq 3$  and wherein:

one or more  $-CH_2-$  groups present in the hydrocarbon chain of (III) may be replaced, independently, by one or more groups selected from  $-O-$ ,  $-CH=CH-$  or  $-C\equiv C-$ ,

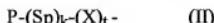
with the proviso that the carbon-carbon double bond of P is not directly connected to the carbon atom of  $Y^1$  or  $Y^2$ ,

$k$  is 1,

$X$  is  $-O-$ ,  $-CO-$ ,  $-COO-$ ,  $-OCO-$ ,  $-CH=CH-$ ,  $-C\equiv C-$ , or a single bond, more preferably  $-O-$ ,  $-COO-$ ,  $-OCO-$  or a single bond,

$t$  is 1.

18. (previously presented): A mixture according to one of claims 7 and 8, wherein at least one of  $A^1$  to  $A^3$  has the meaning of formula (II),



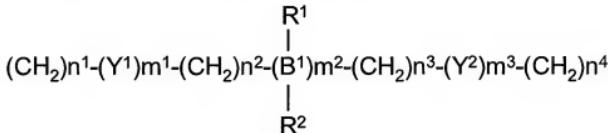
wherein:

P is hydrogen or a polymerizable group such as  $\text{CH}_2=\text{CW}-$ ,  $\text{CH}_2=\text{CW}-\text{O}-$ ,  
 $\text{CH}_2=\text{CW}-\text{COO}-$ ,

wherein:

W is H or  $\text{CH}_3$ ,

Sp has the meaning of formula (III)



(III)

wherein:

$\text{Y}^1$  and  $\text{Y}^2$  each independently represent  $-\text{OCO}-$  or  $-\text{COO}-$ ,

$\text{B}^1$  represents C or  $\text{CH}$ ,

$\text{R}^1$  is hydrogen

$\text{R}^2$  represents a methyl, ethyl, propyl, butyl, pentyl or hexyl group and most preferably a methyl or ethyl group,

$n^1$ ,  $n^2$ ,  $n^3$  and  $n^4$  are independently integers from 0 to 15,

such that  $0 \leq n^1 + n^2 + n^3 + n^4 \leq 15$ ,

$m^1$ ,  $m^2$  and  $m^3$  are independently integers from 0 to 3,

such that  $1 \leq m^1 + m^2 + m^3 \leq 3$ , and wherein:

one or more  $-\text{CH}_2-$  groups present in the hydrocarbon chain of (III) may be replaced, independently, by one or more groups selected from  $-\text{O}-$ ,  $-\text{CH}=\text{CH}-$  or  $-\text{C}\equiv\text{C}-$ ,

with the proviso that the carbon-carbon double bond of P is not directly connected to the carbon atom of Y<sup>1</sup> or Y<sup>2</sup>,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1.

19. (previously presented): A mixture according to claim 1 comprising further agents, such as cross-linking agents, stabilizing agents, initiators, dyes, other chiral or achiral additives and plasticizers.

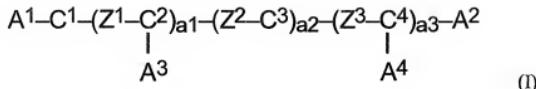
20. (previously presented): A mixture according to claim 1 in form of an elastomer, polymer gel, polymer network or polymer film.

21. (original): A chiral or achiral rod shaped compound, wherein said compound has a rigid core and comprises at least two fused or linked, optionally substituted, non-aromatic, aromatic, carbocyclic or heterocyclic groups, and also comprises at least one optionally substituted alkyl residue, and also comprises at least one polymerizable group and has a transition temperature to the isotropic state of 40 °C or lower.

22. (original): A compound according to claim 21, wherein the compound has a transition temperature to the isotropic state of 20 °C or lower.

23. (previously presented): A compound according to claims 21 and 22, wherein the compound has transition temperature to the isotropic state of 0 °C or lower.

24. (previously presented): A compound according to any one of claims 21 and 22 of formula (I):



wherein;

$A^1$  to  $A^4$  are independently from each other hydrogen, a polar group such as nitro, cyano, a halogen, an optionally substituted methyl group, or an optionally substituted hydrocarbon group of 2 to 40 C-atoms, in which one or more C-atoms may be replaced by a heteroatom, in such a way that oxygen atoms are not linked to one another.

with the proviso that at least one of  $A^1$  to  $A^4$  comprises a polymerizable group.

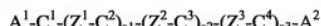
$C^1$  to  $C^4$  are independently from each other optionally substituted non-aromatic, aromatic, carbocyclic or heterocyclic groups, preferably connected to each other at the opposite positions via the bridging groups  $Z^1$  to  $Z^3$ .

$Z^1$  to  $Z^3$  are independently from each other -CH(OH)-, -CO-, -CH<sub>2</sub>(CO)-, -SO-, -CH<sub>2</sub>(SO)-, -SO<sub>2</sub>-, -CH<sub>2</sub>(SO<sub>2</sub>)-, -COO-, -OCO-, -COCF<sub>2</sub>-, -CF<sub>2</sub>CO-, -S-CO-, -CO-S-, -SOO-, -OSO-, -SOS-, -CH<sub>2</sub>-CH<sub>2</sub>-, -OCH<sub>2</sub>-, -CH<sub>2</sub>O-, -CH=CH-, -C≡C-, -CH=CH-COO-, -OCO-CH=CH-, -CH=N-, -C(CH<sub>3</sub>)=N-, -N=N- or a single covalent bond.

$a_1, a_2$  and  $a_3$  are independently from each other integers from 0 to 3, such that

$$1 \leq a_1 + a_2 + a_3 \leq 3.$$

with the proviso that the sequence:



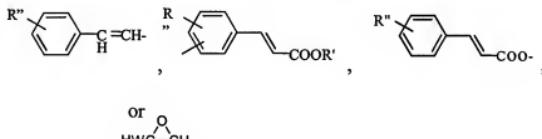
describes the long molecular axis of the rod shaped additive components.

25. (original): A compound according to claim 24, wherein at least one of A<sup>1</sup> to A<sup>4</sup> includes a polymerizable group, selected from a residue of formula (II):

P-(Sp)<sub>k</sub>-(X)<sub>l</sub>- (II)

wherein:

P is hydrogen or a polymerizable group selected from groups comprising  
CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, CH<sub>2</sub>=CW-COO-, CH<sub>2</sub>=C(Ph)-COO-, CH<sub>2</sub>=CH-COO-Ph-,  
CH<sub>2</sub>=CW-CO-NH-, CH<sub>2</sub>=C(Ph)-CONH-, CH<sub>2</sub>=C(COOR')-CH<sub>2</sub>-COO-, CH<sub>2</sub>=CH-OOC-,  
(Ph)-CH=CH-, CH<sub>3</sub>-CH=N-(CH<sub>2</sub>)<sub>m1</sub>-, HO-, HS-, HO-(CH<sub>2</sub>)<sub>m1</sub>-, HS-(CH<sub>2</sub>)<sub>m1</sub>-,  
HO(CH<sub>2</sub>)<sub>m1</sub>COO-, HS(CH<sub>2</sub>)<sub>m1</sub>COO-, HWN-, HOC(O)-, CH<sub>2</sub>=CH-Ph-(O)<sub>m2</sub>,



wherein:

W is H, F, Cl, Br or I or a C<sub>1-6</sub> alkyl group,

m1 is an integer having a value of from 1 to 9,

m2 is an integer having a value of 0 or 1,

R' is a C<sub>1-6</sub> alkyl group,

R'' is a C<sub>1-6</sub> alkyl group, methoxy, cyano, F, Cl, Br or I,

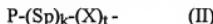
Sp is an optionally substituted straight or branched C<sub>1-30</sub> alkylene group, in which one or more -CH<sub>2</sub>- groups may be replaced by a heteroatom and/or by a polar group and/or it is optionally possible that one or more carbon-carbon single bond(s) is/are replaced by a carbon-carbon double or a triple bond,

k is an integer having a value of from 0 to 4,

X is -O-, -S-, -NH-, -N(CH<sub>3</sub>)-, -CH(OH)-, -CO-, -CH<sub>2</sub>(CO)-, -SO-, -CH<sub>2</sub>(SO)-, -SO<sub>2</sub>-, -CH<sub>2</sub>(SO<sub>2</sub>)-, -COO-, -OCO-, -OCO-O-, -S-CO-, -CO-S-, -SOO-, -OSO-, -SOS-, -CH<sub>2</sub>-CH<sub>2</sub>-, -OCH<sub>2</sub>-, -CH<sub>2</sub>O-, -CH=CH-, -C≡C-, or a single bond,

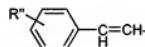
t is an integer having a value of 0 or 1.

26. (previously presented): A compound according to claim 24, wherein at least one of A<sup>1</sup> to A<sup>4</sup> of formula (I) is a group of formula (II):



wherein:

P is a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, CH<sub>2</sub>=CW-COO- or



wherein:

W is H, CH<sub>3</sub>, F, Cl, Br or I,

R'' is a C<sub>1-6</sub> alkyl group, methoxy, cyano, F, Cl, Br or I.

Sp is a C<sub>1-22</sub> branched or straight-chain alkylene group, in which one or more -CH<sub>2</sub>- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH(OH)-, -SO<sub>2</sub>-, -COO-, -OCO-, -OCO-O-, -CH=CH-, -C≡C-, -(CF<sub>2</sub>)<sub>r</sub>-,

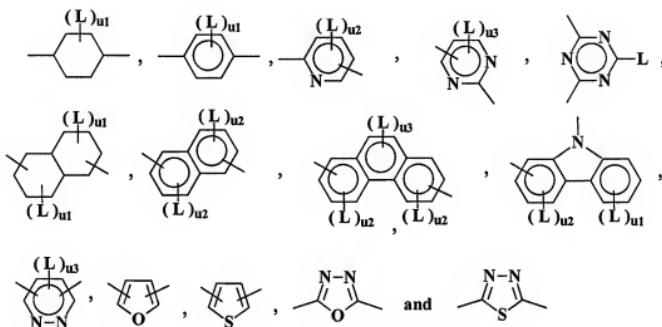
with the proviso that no two oxygen atoms are directly linked to each other, and wherein r is an integer between 1 and 10,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1.

27. (previously presented): A compound according to claim 24, wherein C<sup>1</sup> to C<sup>4</sup> are preferably selected from:



wherein:

L being -CH<sub>3</sub>, -COCH<sub>3</sub>, -NO<sub>2</sub>, -CN or halogen,

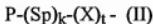
u1 is 0, 1, 2, 3, or 4,

u2 is 0, 1, 2, or 3,

u3 is 0, 1, or 2.

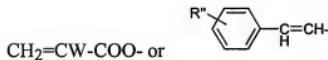
28. (previously presented): A compound according to claim 24, wherein: C<sup>1</sup> to C<sup>4</sup> are selected from optionally substituted cyclohexyl or cyclohexylene, phenyl or phenylene, naphthyl or naphthylene or phenanthryl or phenanthrylene,

A<sup>1</sup> to A<sup>4</sup> independently from each other is hydrogen, a polar group such as cyano, nitro, a halogen, or a group of formula (II),



in which:

P is hydrogen or a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-,



wherein:

W is H, CH<sub>3</sub>, F, Cl Br or I,

R'' is a C<sub>1-6</sub> alkyl group, methoxy, cyano, F, Cl, Br or I,

Sp is a C<sub>1-22</sub> branched or straight-chain alkylene group, in which one or more -CH<sub>2</sub>- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH(OH)-, -SO<sub>2</sub>-, -COO-, -OCO-, -OCO-O-, -CH=CH-, -C≡C-, -(CF<sub>2</sub>)<sub>r</sub>-,

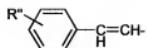
with the proviso that no two oxygen atoms are directly linked to each other, and wherein r is an integer between 1 and 10,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or single bond,

t is 1,

with the proviso that at least one of A1 to A4 comprises a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, CH<sub>2</sub>=CW-COO- or



wherein:

W is H, CH<sub>3</sub>, F, Cl, Br or I,

R'' is a C<sub>1-6</sub> alkyl group, methoxy, cyano, F, Cl, Br or I.

29. (previously presented): A compound according to claim 24, wherein:

A<sup>1</sup> comprises a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O-, CH<sub>2</sub>=CW-

COO-,

wherein:

W is H or CH<sub>3</sub>,

A<sup>2</sup> has the meaning of formula (II),

P-(Sp)<sub>k</sub>-(X)<sub>l</sub>- (II)

in which:

P is hydrogen or a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=CW-O- or CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

Sp is a branched C<sub>3</sub>-C<sub>16</sub> alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight C<sub>2</sub>-C<sub>16</sub> alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more -CH<sub>2</sub>- groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-, -CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more  
preferably -O-, -COO-, -OCO- or a single bond,

t is 1

A<sup>4</sup> is hydrogen.

30. (previously presented): A compound according to claim 24, wherein:

A<sup>1</sup> has the meaning of formula (II),

P-(Sp)<sub>k</sub>-(X)<sub>t</sub> - (II)

wherein:

P is hydrogen or a polymerizable group such as CH<sub>2</sub>=CW-, CH<sub>2</sub>=W-O- or  
CH<sub>2</sub>=CW-COO-,

wherein:

W is H or CH<sub>3</sub>,

Sp is a branched C<sub>3</sub>-C<sub>16</sub> alkylene group, optionally comprising at least one  
oxocarbonyl or carbonyloxy group, or is a straight C<sub>2</sub>-C<sub>16</sub> alkylene group, comprising at least one  
oxocarbonyl or carbonyloxy group, wherein one or more -CH<sub>2</sub>- groups present in the  
hydrocarbon chain may be replaced, independently, by one or more groups selected from -O-,  
-CH=CH-, -C≡C-, with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more  
preferably -O-, -COO-, -OCO- or a single bond,

t is 1,

$A^2$  comprises a polymerizable group such as  $CH_2=CW-$ ,  $CH_2=CW-O-$ , or  $CH_2=CW-COO-$ ,

wherein:

W is H or  $CH_3$ ,

$A^4$  is hydrogen.

31. (previously presented): A compound according to claim 24, wherein:

$A^1$  has the meaning of formula (II),

$P-(Sp)_k-(X)_t-$  (II)

wherein:

P is hydrogen or a polymerizable group such as  $CH_2=CW-$ ,  $CH_2=CW-O-$  or  $CH_2=W-COO-$ ,

wherein:

W is H or  $CH_3$ ,

Sp is a branched  $C_3-C_{16}$  alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight  $C_2-C_{16}$  alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more  $-CH_2-$  groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from  $-O-$ ,  $-CH=CH-$ ,  $-C\equiv C-$ , with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is  $-O-$ ,  $-CO-$ ,  $-COO-$ ,  $-OCO-$ ,  $-CH=CH-$ ,  $-C\equiv C-$ , or a single bond, more preferably  $-O-$ ,  $-COO-$ ,  $-OCO-$  or a single bond,

t is 1,

$A^3$  comprises a polymerizable group such as  $CH_2=CW-$ ,  $CH_2=CW-O-$ , or  $CH_2=CW-COO-$ ,

wherein:

W is H or  $CH_3$ ,

$A^4$  is hydrogen.

32. (previously presented): A compound according to claim 24, wherein:

$A^2$  has the meaning of formula (II),

$P-(Sp)_k-(X)_t-$  (II)

wherein:

P is hydrogen or a polymerizable group such as  $CH_2=CW-$ ,  $CH_2=CW-O-$  or  $CH_2=CW-COO-$ ,

wherein:

W is H or  $CH_3$ ,

Sp is a branched  $C_3-C_{16}$  alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight  $C_2-C_{16}$  alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more  $-CH_2-$  groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from  $-O-$ ,  $-CH=CH-$ ,  $-C\equiv C-$ , with the proviso that no two oxygen atoms are directly linked to each other,

k is 1,

X is  $-O-$ ,  $-CO-$ ,  $-COO-$ ,  $-OCO-$ ,  $-CH=CH-$ ,  $-C\equiv C-$ , or a single bond, more preferably  $-O-$ ,  $-COO-$ ,  $-OCO-$  or a single bond,

t is 1,

$A^3$  comprises a polymerizable group such as  $\text{CH}_2=\text{CW}-$ ,  $\text{CH}_2=\text{CW}-\text{O}-$ , or  $\text{CH}_2=\text{CW}-\text{COO}-$ ,

wherein:

$W$  is H or  $\text{CH}_3$ ,

$A^4$  is hydrogen.

33. (previously presented): A compound according to claim 24, wherein:

$A^1$  and  $A^2$  have the meaning of formula (II),

$P-(\text{Sp})_k-(X)_t-$  (II)

wherein:

$P$  is hydrogen or a polymerizable group such as  $\text{CH}_2=\text{CW}-$ ,  $\text{CH}_2=\text{CW}-\text{O}-$  or  $\text{CH}_2=\text{CW}-\text{COO}-$ ,

wherein:

$W$  is H or  $\text{CH}_3$ ,

$\text{Sp}$  is a branched  $C_3-C_{16}$  alkylene group, optionally comprising at least one oxocarbonyl or carbonyloxy group, or is a straight  $C_2-C_{16}$  alkylene group, comprising at least one oxocarbonyl or carbonyloxy group, wherein one or more  $-\text{CH}_2-$  groups present in the hydrocarbon chain may be replaced, independently, by one or more groups selected from  $-\text{O}-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{C}\equiv\text{C}-$ , with the proviso that no two oxygen atoms are directly linked to each other,

$k$  is 1,

$X$  is  $-\text{O}-$ ,  $-\text{CO}-$ ,  $-\text{COO}-$ ,  $-\text{OCO}-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{C}\equiv\text{C}-$ , or a single bond, more preferably  $-\text{O}-$ ,  $-\text{COO}-$ ,  $-\text{OCO}-$  or a single bond,

$t$  is 1,

$A^3$  comprises a polymerizable group such as  $CH_2=CW-$ ,  $CH_2=CW-O-$ , or  $CH_2=CW-COO-$ ,

wherein:

$W$  is H or  $CH_3$ ,

$A^4$  is hydrogen.

34. (previously presented): A compound according to claim 24, wherein at least one of  $A^1$  to  $A^3$  has the meaning of formula (II),

$P-(Sp)_k-(X)_t-$  (II)

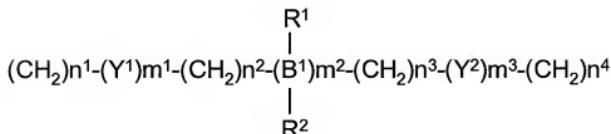
wherein:

$P$  is hydrogen or a polymerizable group such as  $CH_2=CW-$ ,  $CH_2=CW-O-$ ,  $CH_2=CW-COO-$ ,

wherein:

$W$  is H or  $CH_3$ ,

$Sp$  has the meaning of formula (III)



(III)

wherein:

$Y^1$  and  $Y^2$  each independently represent  $-OCO-$  or  $-COO-$ ,

$B^1$  represents C or CH,

$R^1$  and  $R^2$  each independently represent hydrogen or a  $C_1$ - $C_{12}$  alkyl residue, preferably a  $C_1$ - $C_6$  alkyl residue, such as methyl, ethyl, propyl, butyl, pentyl, hexyl or isopropyl residue,

$n1$ ,  $n2$ ,  $n3$  and  $n4$  are independently integers from 0 to 15, such that  $0 \leq n1 + n2 + n3 + n4 \leq 15$ ,

$m1$ ,  $m2$  and  $m3$  are independently integers from 0 to 3, such that  $1 \leq m1 + m2 + m3 \leq 3$  and

wherein one or more  $-CH_2-$  groups present in the hydrocarbon chain of (III) may be replaced, independently, by one or more groups selected from  $-O-$ ,  $-CH=CH-$  or  $-C\equiv C-$ ,

with the proviso that the carbon-carbon double bond of P is not directly connected to the carbon atom of  $Y^1$  or  $Y^2$ ,

$k$  is 1,

$X$  is  $-O-$ ,  $-CO-$ ,  $-COO-$ ,  $-OCO-$ ,  $-CH=CH-$ ,  $-C\equiv C-$ , or a single bond, more preferably  $-O-$ ,  $-COO-$ ,  $-OCO-$  or a single bond,

$t$  is 1.

35. (previously presented): A compound according to claim 24, wherein at least one of  $A^1$  to  $A^3$  has the meaning of formula (II),

$P-(Sp)_k-(X)_t - \quad (II)$

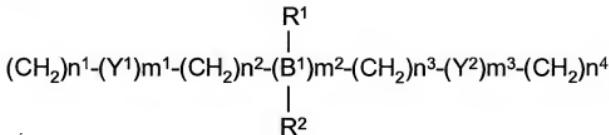
wherein:

$P$  is hydrogen or a polymerizable group such as  $CH_2=CW-$ ,  $CH_2=CW-O-$ ,  $CH_2=CW-COO-$ ,

wherein:

W is H or CH<sub>3</sub>,

Sp has the meaning of formula (III)



(III)

wherein:

Y<sup>1</sup> and Y<sup>2</sup> each independently represent -OCO- or -COO-,

B<sup>1</sup> represents C or CH,

R<sup>1</sup> is hydrogen,

R<sup>2</sup> represents a methyl, ethyl, propyl, butyl, pentyl or hexyl group

and most preferably a methyl or ethyl group,

n1, n2, n3 and n4 are independently integers from 0 to 15, such that 0 ≤ n1 + n2 + n3 + n4 ≤ 15,

m1, m2 and m3 are independently integers from 0 to 3, such that m1 + m2 + m3 ≤ 3, and

wherein one or more -CH<sub>2</sub>- groups present in the hydrocarbon chain of (III) may be replaced, independently, by one or more groups selected from -O-, -CH=CH- or -C≡C-,

with the proviso that the carbon-carbon double bond of P is not directly connected to the carbon atom of Y<sup>1</sup> or Y<sup>2</sup>,

k is 1,

X is -O-, -CO-, -COO-, -OCO-, -CH=CH-, -C≡C-, or a single bond, more preferably -O-, -COO-, -OCO- or a single bond,

t is 1.

36. (currently amended): Use A method of using a chiral or achiral rod shaped compound ~~according to claim 21 for the preparation of, comprising preparing~~ mesogenic polymer mixtures according to claim 1 with a chiral or achiral rod shaped compound, wherein said compound has a rigid core and comprises at least two fused or linked, optionally substituted, non-aromatic, aromatic, carbocyclic or heterocyclic groups, and also comprises at least one optionally substituted alkyl residue, and also comprises at least one polymerizable group and has a transition temperature to the isotropic state of 40 °C or lower.

37. (previously presented): Polymer networks prepared from a mixture according to claim 1.

38. (previously presented): Liquid crystalline polymer films prepared from a mixture according to claim 1.

39. (currently amended): Use A method of using a polymer network ~~according to claim 37 or a liquid crystalline polymer film according to claim 38 for the preparation of, comprising preparing~~ unstructured or structured optical and electro-optical components and multilayer systems from (A) a polymer network prepared from a mixture according to claim 1 or (B) a liquid crystalline polymer film prepared from a mixture according to claim 1.

40. (currently amended): Use A method of using a mesogenic, cross-linkable mixture ~~according to claim 1 for the preparation of, comprising preparing~~ an elastomer, polymer gel, polymer network or polymer film from a mesogenic, cross-linkable mixture according to claim 1.

41. (currently amended): Use A method of using a polymer network according to claim 37 for the manufacture of devices such as, comprising manufacturing waveguides, optical gratings, filters, retarders, polarizers, piezoelectric cells or thin film exhibiting non-linear optical properties from a polymer network according to claim 37.

42. (previously presented): Optical or electro-optical components comprising a polymer network according to claim 37.

43. (currently amended): Use A method of using a liquid crystalline polymer film according to claim 38 for the manufacture of devices such as, comprising manufacturing waveguides, optical gratings, filters, retarders, polarizers, piezoelectric cells or thin film exhibiting non-linear optical properties from a liquid crystalline polymer film according to claim 38.

44. (previously presented): Optical or electro-optical components comprising a liquid crystalline polymer film according to claim 38.